A Resource for Biological Career Education

An Honors Thesis (HONRS 499)

by

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Preface

My senior honors thesis fulfilled personal and academic needs. When graduating from high school and beginning college, I was unaware of career options suited to my talents and interests. I became interested in biology, particularly veterinary medicine, in my first year of college but did not look into other career options. During my senior year while applying to veterinary school and mapping future plans, I wished I planned a specific backup career, or interim career in the event I did not get accepted the first time I applied to veterinary school. Early use career exploration techniques presented in this thesis would have limited the difficulties I have faced in making career and educational decisions. I hope that future students would be spared the same troubles.

The project proved to be a capstone to my honors and biological education at Ball State. My perspective was expanded as I investigated career options and resources available to a biology major. I enjoyed talking with high school teachers on a professional level. Information and resources acquired throughout my undergraduate career were integrated. The career information I had obtained was processed. I learned about myself as I completed this project: I still want to become a veterinarian but realize there are other biological occupations that interest me. This project helped me make decisions and shape my future.

Abstract

High school biology teachers need a resource guide for career exploration of biological occupations. Information on local practices is used in the creation of the resource guide to obtain insight into strong and weak areas of biological career education. Current resources and practices are studied to justify and design activities for personal assessment, obtain information on specific careers, and gain experience in biological settings. Teachers guide these activities and serve as role models and mentors. Students benefit academically, intellectually, and personally from the use of biological career exploration.

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The Task

Biology is a broad discipline that intimidates high school students. To further the problem, students lacking information on the range of biological occupations may have misconceptions of biologists. Career exploration, the guided education and assessment of vocational options, is a solution to the problem. Biology courses will become pertinent to the overwhelmed or uninterested student as the relevance of their education becomes clear. In addition, knowledge will empower students to make informed choices when planning their career and educational path, and include biology in their career base. In fulfilling the task of biological career education, a resource could be used by teachers making education more effective.

Local Practices

In creating a resource for biological career education, local practices are examined. Activities used in the classroom provide experience with techniques used in the work place. Teachers' philosophies and actions regarding career education are important factors in producing well-rounded, functional, and informed graduates. Differences between schools, grade levels, and teachers reveal what is useful and point to areas needing attention.

Michael Mayfield, biology teacher at the Indiana Academy of Science, Mathematics, and Humanities (Muncie, Indiana), teaches gifted junior and senior high school students. Mr. Mayfield teaches a variety of focused biology courses: human physiology and anatomy, ecology, microbiology, botany, environmental science, introductory zoology, and bioethics in addition to advising and teaching research classes. The Academy students have many opportunities to investigate occupational interests. Students meet professionals through field trips, academic competitions, and as classroom guests. The Academy emphasizes lab training in all science courses so students get exposure to practical techniques including solution preparation, DNA

transformation, recombinant DNA, spectrophotometry, and gel electrophoresis. Mr. Mayfield requires students to prepare lab materials in addition to designing and teaching their own lab. The Academy has clubs and organizations (for example: environmental science club) that provide further exposure to professionals. Students gain insight into scientific work, become aware of entry level jobs, and form job contacts.

Mr. Mayfield guides his students in educational and occupational planning. Students often inquire about career options and Mr. Mayfield gives honest advice without discouragement. If a student is interested in a limited field Mr. Mayfield tells them to pursue it but realize their chance of employment might suffer. Mr. Mayfield feels students are more familiar with the practical jobs related to biology like doctors and biochemists. He helps students develop their individual talents and interests by supporting what they do and providing opportunities for personal expression. A student interested and talented in vocal performance compared vocal cords in different animals and an art student made a skeleton as part of an independent project. In light of all this, some of Mr. Mayfield's students are not investigating their career options. Mr. Mayfield encourages these and other students to get a well-rounded education rather than limiting themselves to one thing; there is no reason students need to know their future now. Mr. Mayfield says, "I tell my students they are obligated to change their major at least 10 times...It is disheartening to see someone decide they can only be a doctor and then find they don't like it." Mr. Mayfield's methods help students examine all occupational options in a personal and critical manor.

Mrs. Dawn Bernd-Steffes, instructor of biology at Burris laboratory school (Muncie, Indiana), teaches ninth grade general biology. Mrs. Bernd-Steffes' main focus is not career

education. Biological careers are presented in the form of what scientists are doing and stressing biology is a broad field needing investigation. In addition, Mrs. Bernd-Steffes' class spends one week a year studying a scientist, "...last year we looked at George Washington Carver. Plant biology is one area that is typically overlooked...". Lab activities involve teaching the basics of science, like measurement, but computers and spectrophotometers show that biology is theoretical, a collection of proposed principles believed to be true, and there is technology associated with its study. Students have opportunities for independent study if they show interest in a particular topic.

Mrs. Bernd-Steffes' philosophy on career education is dictated by the biological knowledge her students possess. Students lack basic information; therefore, not all occupations in biology can be presented. Mrs. Bernd-Steffes must choose which fields to focus on since class time is limited and biology is a vast discipline. Mrs. Bernd-Steffes does not do a lot with environmental science but says students can get that information later. Zoology is also skipped over because Mrs. Bernd-Steffes feels there are limited jobs in this area compared with the other biological fields. Mrs. Bernd-Steffes encourages all students to obtain further education although most of her students are not yet thinking about educational or occupational goals. Mrs. Bernd-Steffes encourages curious biology students and tries to present information so that others will become intrigued.

Mr. William Douglas currently teaches freshman biology and upper level zoology courses at Muncie Central High School, though he has taught just about everything. Mr. Douglas does not have a set curriculum addressing career education though he does do several things to inform students of career options in biology. The textbook used contains information

on careers in biology. Mr. Douglas tries to represent all areas of biology but admits it is difficult to do considering the amount of material and time constraints. Ecology is at the end of the book and tends to get overlooked. Health related topics such as the circulatory system are not taught in the biology class because students get the information in health class. The majority of time in general biology is spent teaching molecular and chemical aspects of biology. Lab experience comprises 25 percent of class time. Younger students are closely directed in the lab while older students are allowed open-ended experiments. Computers with simulation programs are used along with spectrophotometers. The human genetics class gets experience with gel electrophoresis.

Individual students are given attention in career education when needed. Mr. Douglas' upper lever students do inquire about careers in biology. Since Mr. Douglas is currently teaching zoology, students ask about veterinary medicine, veterinary technology, and animal related occupations. Mr. Douglas helps students develop talents and interests by paying attention to their activities in class and out of class. Educational guidance includes informing students of career options in their area of talent or interest and the of classes required for the job or field. Mr. Douglas wants society to realize there is a wide range of respectable occupations, and he helps his students learn the same - educational options include technical and vocational training, not just four-year degrees. Mr. Douglas wants students to focus on a definite area before graduation so they can begin the necessary steps to a career.

The guidance counselor at Muncie Central High School, Mr. Rowe, helps students learn about themselves and career options. All seniors take a computer test, Career Occupation Interest Service (C.O.I.N.S). The assessment test evaluates student interests and abilities in order

to match them up with suitable careers. Students learn what post-secondary education they need for their area. Other students can complete another assessment that is more specific in evaluating personal traits and appropriate careers. Students inquiring about biological careers through the school's guidance services are referred to a biology teacher or the head of the science department.

Looking at these teachers' practices signals many things about career education. Student educational level and interests dictate career education. Accommodations need to be made that account for students varying backgrounds and abilities. The advisor/role model facet of teaching is invaluable in encouraging students to pursue biology. Biology is a diverse academic and occupational area that can be explored by all students.

Career Exploration

When investigating potential occupations, students should fulfill three objectives: perform a self-evaluation, gain information on careers, and experience the occupation. The emphasis applied to each area is dependent upon the time available for career education and student needs. Guidance in these areas will provide necessary information for educational and career planning.

Personal Evaluation

The goals of a personal evaluation include obtaining knowledge of personal talents, goals, desires, preferences, and beliefs. Personal characteristics affect job performance and satisfaction. Personal evaluation should spark thought regarding career options. Students need to be aware of personal characteristics before they decide a particular career is suited for them. The personal evaluation should be introduced to students early so they can reevaluate their position as it

changes. Evaluations also help teachers plan activities that will interest and benefit their students. Different methods of personal assessment can be used as long as the objectives are met.

Biological work requires looking at specific personal characteristics. Biologists need to have a genuine curiosity about living systems and how they work. All scientists need to be open to new ideas and be able to evaluate them objectively. Scientists rely on their powers of observation. Self-motivation, creativity, patience, precision, and organization are qualities that help biologists succeed in research. Intelligence, ability to work as a team, and verbal and math skills are very useful though not unique to biology or science (Winter, 1990). Presence of these attributes, or willingness to strengthen them, suggests a student is suited for a biological career.

Specific examination is needed when a student is ready to identify with a specific area of biology. Location preference should be determined because some jobs are available only in specific regions. Physical stamina and preference for the wilderness will narrow the jobs to choose from. Students must evaluate the time and energy they are willing to devote to their job as occupations vary in these demands. The importance of money and prestige should be evaluated. Certain jobs are not lucrative and a person choosing the occupation needs other motivations. The amount and type of education a person will undergo affects the jobs available to that individual. Technical training was well as associate, bachelor, and doctoral degrees equate to different biological occupations (Winter, 1990). Specific interests, talents, and knowledge may point to specific areas of biology. Strong ethical or religious convictions may limit job options if areas affecting job performance are involved.

Many schools have formal evaluations to aid students in self-assessment. Students of

Putnam City Schools in Oklahoma City complete interest inventories and academic assessments in eighth and tenth grade as a basis for career advisement. Students, counselors, and parents develop a plan of study within a career cluster (Schott and High, 1996). The ASVAB, Armed Services Vocational Aptitude Battery, is a career counseling tool used in secondary and post-secondary schools with military and civilian students. Aptitude, interest information, and self-reported personal preference data are measured to help students link themselves with occupations. Students also consider new careers and develop career exploration skills based on the research and analysis (Wall, 1994). The examination is helpful in the career exploration process; however, counselors need training to accurately advise students and interpret the test (Military Entrance Processing Command, 1986).

There are informal and less time-consuming self-evaluation activities. Appendix 1 lists types of activities that are useful. Students could write a journal exploring their thoughts on various careers and different aspects relating to jobs. Appendix 7 lists ideas for journal entries in personal evaluation regarding career choices. A creative paper could be written in which the student describes what they picture themselves doing in the future. A simple questionnaire is another option; students answer questions on career-related personal preferences and traits. Appendix 2 contains a questionnaire designed for personal evaluation. A class or small group discussion addressing the pros and cons of job characteristics would be useful. Appendix 6 lists questions a teacher could use in a group discussion aimed at evaluating personal traits important to career development. Computer programs are available that access career interests, find jobs that relate to those interests, and develop a plan for entering or preparing for the occupation. Some resources, literature and computer-based, on career exploration owned by the Ball State

University Bracken Library are listed in the bibliography.

The quantity and type of personal assessment activities used in career education depends on time, resources, and educational level of the students. If class time it limited, out-of-class assignments are an option. Most of the activities presented need not be time-consuming. Computers and video equipment might not be available but other activities do not require these resources. Young high school students benefit from learning the personal factors to be considered when choosing a career. As more information is gained, students can evaluate careers based on personal characteristics. Finally, older high school students pick a career cluster in order to facilitate educational planning.

Career Information

Once a student knows what they want out of a job, they can investigate the occupations that fit their personality. Career information can be obtained through classroom activities, extracurricular activities, community involvement, independent study, or experience with professionals. Two objectives should be met when informing students of career options in biology: present all areas of biology with their job opportunities and provide experience with techniques used in various biological careers.

Students should obtain specific information on the studied career. Students need to know enough about a job so personal characteristics can be matched to an appropriate career. Teachers should make students aware that job availability over time varies regionally and seasonally. Recent advances and outlook for a career may influence students' occupational interests. Students need to be prepared for a particular educational commitment and the cost associated with school. The amount of money a job provides is important to know. Every occupation has

responsibilities, benefits, drawbacks, and perceptions associated with its work. Students need a honest understanding of a career before they embark upon that particular path.

Teachers can present career information in many ways. Appendix 1 lists activities teachers can adapt toward obtaining career information. Required assignments like research papers and book reports could be used to introduce career specifics. Appendices 6 and 7 list ideas for group discussion and journal entries in career exploration. Appendix 4 describes biological fields that should be represented. State adopted biology texts contain sections with information on job opportunities related to the subject being studied. The "Teaching Resources in Biology" section of the bibliography lists materials for teachers presenting biological career information. Documentaries of biologists are a source for career information. Computer literacy is an important part of education and could be incorporated here; for example, the internet can be used to obtain information and communicate with people. Appendix 8 describes internet site that provide biological career information. Students curious about a particular area could be guided in an independent project. Appendix 5 lists a number of biological careers students might find interesting. The "Resources on Biological Occupations" contains sources useful to students. Appendix 3 outlines questions students should answer about a career they are interested in. With all the choices, the only problem is deciding which will benefit a particular student.

The amount of career information presented to students is dictated by the time and resources available, as well as students educational level. A majority of time is spent covering basic biological information with younger students. Actual career education cannot be a major focus although making biological information interesting and pertinent to the students will

undoubtedly facilitate inquiry into biological occupations. If limited time for career exploration is encountered with older students emphasis should be placed on getting a strong education that will open career options. Resources and representatives from all occupational fields will not be available in every region; therefore, indirect experiences with the field are necessary (reading, writing, television, and documentaries). Younger high school students will need to gain basic knowledge of biology while older high school students can focus on specifics and theory behind various practices.

Experience with Careers

Experience with the tools of biology is important in fully understanding the nature of biological work. Laboratory investigations are the key to getting students active and involved in biology; therefore, efforts to present varied experiences are necessary. For instance, 0% of incoming college undergraduates from 1985-1991 indicated botany was their choice of major indicating botany is under-represented as a biological subfield (Chronicles of Higher Education 1984-1990) (Uno, 1994). Hydroponics is one way in which plants can be incorporated into a biology course. Technological concepts and careers in agriculture and botany can be presented while students use light, moisture, and soil acidity meters to study plant growth (Illinois State Board of Education, Department of Adult, Vocational, and Technical Education, 1991).

Experience with professionals and professional settings educates students so they can be certain a biological career is suited for them. Professionals are often willing to come to schools and talk with students about the work they do. Career fairs are in Pine Bush High School (Pine Bush, NY) to give women and minorities an opportunity to meet with members of the local scientific community. Students were able to question the scientists in an informal situation.

Professionals were recruited from companies by contacting personnel departments, student parents, and graduates of the school (Duncanson, 1995). Women are exposed to new opportunities when they learn about traditionally male careers.

Work and research programs are also invaluable in biological career education. The Agricultural Research Service (ARS) has established a partnership with John F. Kennedy High School in New Orleans, LA that helps students learn about scientific research, microbiology, chemistry, biology and scientific presentations. Teachers at the school can attend the ARS Teacher's Research Fellowship Program. The ARS benefits from the program by educating its future research scientists (Kinzel, 1992). Students work alongside scientists and technicians and learn what the real scientific world is like.

Volunteering and shadowing are helpful in gaining experience and career information. Some schools can have required career days in which students shadow a professional during the school day. In addition, students can follow professionals on their own time if teachers inform interested students of their contacts in work places. Students can gain information if guided in observing specific characteristics of the occupation. Students should take notes on what they do and see and note personal feelings.

Educating Teachers

Teachers can gain information, products, and resources regarding careers in biology from various places. Career information is available in books, documentaries, internet, or from professionals in the field. Companies distributing career and biological products advertise in biological and education journals and the internet. The bibliography contains resources from which teachers can gain information on careers. Appendix 8 contains internet sites informative

to teachers.

Experience in a biological occupation (other than teaching) is beneficial to teachers trying to grasp knowledge of other biological work. Typically, experience is available locally. Teachers get experience with agricultural research at Agricultural Research Service Laboratories around the country (Stanley, 1992). A teacher could volunteer or shadow just as their students might. These opportunities provide insight into areas overlooked in teacher education.

Conclusion

Biological career exploration encourages a student-teacher bond. Mentoring science and biology high school students is necessary in promoting students' biological interest and confidence. Mentoring in high school includes discussing relevant, current scientific information, displaying the skills of an experienced scientist, guiding students in developing their interests and talents, and gaining mutual respect. The high school teacher is a general mentor during important years when students start thinking seriously about their future.

Students exposed to career education will benefit on many levels. Career information will be gained. Personal awareness will be developed. Interest in biology will be increased. Job skills will be introduced: scientific techniques, interpersonal relations, professionalism, responsibility. Certainly, not all of the activities and resources presented need to be used; students will benefit when teachers create a personalized career education program.

Appendices

Appendix 1

Activities

Interviews
Skits
Theme writing (Self reflective journals)
Debates
General Discussion
Small group discussion
Committee work
Individual or group study
Oral reports
Newspaper articles
Field trips
Movies
Filmstrips
Slides
Overhead or opaque projections
Collect want ads
Write want ads
Employment Commission job list
Exhibits
Collect materials
Observations

Role playing
Resource person
Braining storming
Research projects
Demonstrations
Prepare lists
Radio and television programs
Projects
Illustrations
Chalktalks
Panel discussions
Make files
Tests
Problem Solving
Prepare charts or graphs
Window displays
Assigned reading
Thought problems
Prepare speeches
Notebooks
Lecture

(From Introduction to Vocation, Teacher's Guide Course Number 799, July, 1965, prepared by H.E. Beam and J.R. Clary, North Carolina)

Additional career related activities include:
Volunteer work
Preparing lab experiments
Academic teams
Career Day
Teaching lessons
Tutoring
Professional Clubs

Appendix 2

Personal Evaluation Questionnaire

Location:
Do you like to work indoors or outdoors?

Where would you prefer to work (country, state, region)?

Are you willing to relocate?

Type of Work:
What would you prefer to work with (people, animals, plants, microbes, instruments, machines, computers)?

Do you like to work individually or as part of a team?

Are you more comfortable communicating orally than in writing?

Would you prefer to work for a government organization (country, state, local), university/school, private business, conservation group, or industrial corporation?

What work setting do you prefer (lab, hospital, field, classroom, office)?

Are you interested in teaching or conducting research?

How much time are you willing to devote to education?

How many hours a week are you willing to work?

Would you be willing to do extra work or attend social activities?

Personal Traits:
What previous work and educational experiences have you had and what did you like or dislike about them?

What are your physical abilities or limitations?

What is your income expectation and what is the importance of this factor?

What status level would you like to obtain? Importance?

Do you desire a position of authority?

Do you consider yourself to be analytical?

How flexible are you willing to be with regard to work schedule and duties?

Are you able to be open-minded?

Under what circumstances are you able to remain calm and exercise patience (when are you not able to)?

What situations are you uncomfortable handling?

Do you have any ethical/religious beliefs that would effect your work?

Do you have talent in a particular area?

Are you interested in an area of study or work?

Do you enjoy traveling?

(adapted from Miller, 1992)

Appendix 3

Career Information

Obtain the following information on a particular career

Educational and practical experience requirements:

Cost and financing of education:

Pay scale:

Opportunities and placement (location, setting, employer, advancement):

Duties and responsibilities (daily and extra work, social activities):

Nature of work (attire requirements, group vs individual, seasonal):

Work schedule (hours per week):

Benefits of career:

Problems with career (hazards or obstacles):

Status:

Important personal requirements:

(adapted from Miller, 1992)

Appendix 4

Biological Fields

Agricultural Science/ Agronomy: biological science seeking knowledge about plants and animals and applying the information toward human food production. Important areas in the field include plant pathology, entomology, ecology, horticulture, forestry, animal husbandry, soil science, seed and food technology, and agribusiness.

Animal Science/Husbandry: Applied Science relating to breeding, nutrition, physiology, disease of animals, and general care of animals. Areas in the field include zoo and aquarium keeping, veterinary medicine, wildlife rehabilitation, animal training, and grooming.

Aquatic/Marine Biology: the science concerned with biological events and/or organisms in fresh or salt water. Subfields include aquaculture/marine culture and limnology/oceanography.

Bionics: application of biological principles to the study and design of mechanical systems.

Biophysics: science that use tools and concepts of physics to study living organisms.

Biosystematics: branch of biology dealing with description, classification, naming, and evolutionary placement of biological systems.

Botany: broad field containing areas dealing with the study of plants. Areas of importance are taxonomy, algology (algae and simple green plants), bryology (mosses and liverworts), dendrology (trees and shrubs), horticulture, forestry, physiology, and pathology.

Developmental Biology: field that uses knowledge of chemistry, genetics, cellular components and processes to learn how organisms develop and function.

Ecology and Wildlife Biology: study of organisms' habitat, heritage, needs, and interactions with their environment and other organisms.

Genetics: scientific study concerned with the processes of inheritance, mechanisms for passing traits on to offspring. Genetics is applied in medicine and studied in a basic sense.

Microbiology: study of microscopic organisms. Study subjects include bacteria, algae, protozoa, fungi, and viruses.

Medicine: study and application of human health information to promote physical and mental well-being. Areas of study within the field include anatomy, microbiology, biochemistry, genetics, embryology, cytology, endocrinology, hematology, histology, immunology, parasitology, pathology, physiology, pharmacology, nutrition, toxicology, and virology.

Molecular Biology: study of the mechanisms of cellular processes like DNA, RNA, and protein synthesis.

Zoology: study of organisms in the animal kingdom; broad field focusing in behavior, development, anatomy, and physiology of animals. Study subjects include invertebrates such as insects, arachnids, arthropods, and annelids, and vertrbrates like fish, amphibians, reptiles, birds, and mammals..

(adapted from Winter, 1990)

Appendix 5

Biological Careers

Applied Jobs:
agronomist
animal care-taker
animal groomer or trainer
aquaculturalist
cattleman
commercial fisherman
commercial oysterman
commercial shrimper
farmer
fish hatcher
floral designer
food processor
forest ranger
horticulturist
landscape architect
stream manager
swine herdsman
wildlife rehabilitator
zoo/aquarium keeper

Technical Jobs:
biological artist
dental hygienist
Emergency Medical Technician
laboratory technician
medical lab assistant
medical technologist
museum technician
nuclear medicine technologist
nurse
nurse's aid
paramedic
physical therapist
physician's assistant
radiation therapy technologist
seed technician
slide maker
veterinary technician
water treatment analyst

Professional Jobs:
anesthesiologist
bacteriologist
biochemist
biological engineer
chiropractor
cytologist
dentist
dermatologist
endocrinologist
geneticist (counselor)
health director
histologist
immunologist
patholotgist
parasitologist
physician
teacher
surgeon
veterinarian
virologist

Research Areas:
agricultural biology
aquatic biology
bacteriology
biochemistry
botany
cancer biology
cell biology
cytology
developmental biology
ecology
entomology
forestry
genetics
herpetology
histology
ichthyology
mammology
microbiology
oceanography
ornithology
parasitology
pathology
physiology
virology
wildlife management
zoology

(adapted from Miller, 1992 and Winter, 1990)

Appendix 6

Discussion Ideas in Career Exploration

Ask students to:

-name careers that use biological information
-describe duties of the job
-describe the type of people found in the occupation
-identify where the job is needed
-list how the professional helps society
-list the personal benefits the professional receives
-list the drawbacks related to the job

Appendix 7

Journal Entry Topics in Career Exploration

Write about:

-a job you like and what you like about it
-a job you dislike and what you dislike about it
-jobs that would make you uncomfortable
-the type of work you would like to do
-things that interest you and that you want to know more about
-your job-related talents
-work experiences
-educational goals
-how you work with other people
-tally of biological careers and basic information on the occupation
-current biological advancement/concern in the news

Appendix 8

Internet Resources on Biological Careers

(t=teacher, s=student)

Agricultural Careers (s)
http://167.217.6.11/state/careers.html

American Association for the Advancement of Science Home Page
http://www.aaas.org (t)
Contains current science information and educational resources.

Bio Online - Career center and Resource Directory (t, s)
http://www.bio.com/
Career center contains job searches and career guide articles. Resource directory has lists of companies with biological products and services. Educational, corporate, and governmental links are listed.

Botany Careers (s)
http://www.ou.edu/cas/botany-micro/careers/
Career information and opportunities in botany are presented along with national botanical organizations.

Career Exploration Inventory: A Guide for Exploring Work, Leisure, and Learning (s)
http://www.flash.net/~career30/carexpl.htm
Contains information on the career assessment guide that can be ordered. Careers clusters represented that are related to biology include life sciences, plants, and animal care.

Careers in Biology Emporia State University (s)
http://www.emporia.edu/s/www/biosci/carebiol.htm
Career information is divided into the categories of "Molecular and Cellular" and "Organismal and Field" biology. Sites are listed that post jobs and grants.

Careers for Biology Majors (s)
http://ns9000.furman.edu/~snyder/careers/careerlist.html
An alphabetical list of careers in biology with links containing general and advanced information on the career.

Center on Education and Work (t)
http://www.cew.wisc.edu/defalt.html
Contains career, workshop, conference, and research information.

Genentech Online Assess (t)

http://outcast.gene.com/
Presents research and opportunities information at the company. Linked to Access Excellence with the National Association of Biology Teachers.

Girls and women in Science (s,t)
http://www.beliot.edu/~gwsci/gws.html
Describes the Girls and Women in Science Project in which science teachers interact with college science faculty and other educators, college students, and sixth-grade students and their parents. The goal of the project is to get girls interested in science and mathematics.

Internet Resources for Biologists (t, s)
http://www.furman.edu/~snyder/internet/internet.html
Contains a list of general biological topics opening to Web sites.

NetVet - Veterinary Career Resources (s)
http://netvet.wustl.edu/vcareer.htm
Presents information on veterinary medicine including occupational and academic insights.

Science Professional Network (s, t)
http://recruit.sciencemag.org
Presents information on career resources and opportunities. Research opportunities for students are listed.

Zoological Park Careers (s)
http://crusher.bev.net/education/SeaWorld
Contains information on preparation for jobs in zoos.

Zoos and Aquarium of the American Zoo and Aquarium Association (s)
http://www.aza.org/
Presents information about the American Aquarium and Zoo Association and conservation programs.

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